originating from remains of the Wolffian body. The pseudoglomeruli only were missing.

Cohen has made an important observation in regard to the pigment contained in the adenomyomata apparently originating from the Wolffian body. With few exceptions he finds that it always contains iron. The pigment in the normal remnants of the Wolffian body, especially the organ of Giraldis, in every case examined failed to respond to the tests for iron. He calls attention to the bearing of these facts upon v. Recklinghausen's suggestion of an homology between the pigments in these two situations.

[One might consider the fact that some adenomyomata, apparently originating from the mucosa of the uterus, have the structure described as characteristic of those arising from remnants of the Wolffian body, as evidence that the posterior part of the Müllerian duct originates in the anamnia by a division of the Wolffian duct. If this were the case it is conceivable that some of the tubules of the Wolffian body might be connected with that portion of the Wolffian duct which gives origin to the Müllerian duct. Retaining this connection as the Müllerian ducts fuse to form the uterus, they might give origin in adult life to an adenomyoma apparently taking its origin from the mucous membrane. At any rate, it is not remarkable that structures so closely associated in their origin should tend to approach each other in their adult form.—Ed.]

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF

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The Use of Coloring Matters in Tracing Pollution of Water Supplies.—A comparative study of the efficiency of various coloring matters in tracing the flow of polluting influences has been made by A. Trillat (*Annales de l'Institut Pasteur*, 1899, v. p. 444), who was called upon to investigate a case in which he proved that a conduit was carrying other water than that for which it was intended. The coloring agents studied included eosin, auramin, acid fuchsin, safranin, methylene-blue, fluorescin, and others. Lime salts in water affect most of these by decolorizing them or throwing them out of solution. Those least affected are safranin, methylene-blue, and fluorescin. The intensity of the coloration of the several agents varies greatly, not only with the nature of the water, but still more with the nature of the soil. Clay and sand allow all the colors to pass freely; humus and garden soil will pass only acid fuchsin and fluorescin, while peat decolorizes all, even fluorescin. Dissolved in water in the proportion of one part in fifty millions the several agents give different degrees of intensity of color in the following order: fluorescin, malachite-green, methylene-blue, violet, neutral fuchsin, safranin, congo-red. As fluorescin is more readily seen when very dilute solutions are examined against a black background, he devised a "fluoroscope" consisting of two tubes of white glass attached vertically to a stand by means of clamps. The tubes are 1.2 metres long, and 2 cm. in diameter. They are open at the top, and closed at the bottom with blackened stoppers. The depth of color is determined by looking downward at the black stopper through a column of water 1.2 metres in height, the other tube being filled with water containing no added substance. By means of this apparatus the ordinary visibility of fluorescin is increased to such an extent that one part can be seen when diluted with two billion parts of water. In many cases it is quite enough to add a small amount, say 100 grammes, of fluorescin to the water whose course is to be traced. A kilogramme suffices to impart color to the enormous bulk of 2,000,000 cubic metres.

Meat Poisoning.—In none of the numerous cases of meat poisoning hitherto investigated bacteriologically has the proteus vulgaris been definitely determined to be the exciting cause, although in several instances it has been under suspicion. The first case in which the evidence appears to be in any way conclusive is one reported by S. GLÜCKSMANN (*Centralblatt für Bakteriologie*, xxv. p. 696). The offending meat was from a pig slaughtered on account of sickness. It was pickled for four days, and then smoked for three more and placed on sale. Those who ate the cooked meat suffered no inconvenience, but two persons, father and son, who ate a small piece in the raw state, were seized with gastro-enteritis, and the father died. Examination of the victim's organs yielded no satisfactory results. Proteus vulgaris was found in the meat and in the stomach contents. Bouillon cultures injected into mice and guinea-pigs proved to be very virulent. Glücksmann suggests that the bacillus may have been the cause of the sickness of the pig, or that the meat became contaminated by it after the slaughtering and during its treatment. In either case it is evident that neither pickling nor smoking was sufficient to interfere with the vitality of the organism.

Another outbreak of an unusual character in which no fatalities occurred is reported by DR. W. N. BARKER (*British Medical Journal*, November 11, 1899). Here the meat was canned corned-beef, which presented no unusual appearance other than that it was less firm than commonly is the case, and that the jelly was rather oily. It had no odor, and its taste was not disagreeable excepting to one of the twenty-four persons who shared it. All who ate were affected. Their ages ran from two to eighty-nine years, and about half were under twelve. The main symptoms were the same in all, but each case presented symptoms peculiar to itself. The following will serve as a type of the whole number: A woman ate about two ounces of the meat, and in two hours was seized with sudden faintness, dizziness, and drowsiness, followed by nausea and great muscular weakness, most marked in the legs. Vomiting and retching soon set in, accompanied by intense frontal headache, and followed by colic and diarrhœa. An hour after the onset she was removed to the hospital, where, when first seen, she was lying in a state of extreme collapse with her knees drawn up. The skin was cold and clammy, the pulse small and rapid, respiration shallow, pupils dilated, and temperature subnormal. Her stomach was washed out, and this treatment was soon followed by improvement. The pulse became stronger, pain and retching ceased, drowsiness became less marked, and only the headache and diarrhœa remained. In about an hour the condition of collapse and other symptoms reappeared, but in less marked degree than before. The stomach was again washed out, and this time with permanent good effect. She slept well, and on the following morning all the symptoms, except slight frontal headache, had disappeared.

Bacteria in the Arctic Regions.—Some interesting facts concerning the freedom of the air, water, and even the intestinal contents of animals of Arctic regions from bacteria are communicated by DR. LEVIN, of Stockholm (*Annales de l'Institut Pasteur*, July, 1899, p. 558), who took part in the Natthorst expedition during the summer of 1898. Working each time with 20,000 litres of air, he found practically no bacteria. Sea water, snow, and ice yielded on an average one bacterium per 11 c.c. In twelve samples of brown mud he found only a single bacterium. The intestinal contents of polar bears, seals, eider ducks, and other birds, sharks, sea urchins, anemones, and crabs were nearly always sterile. Not only did he obtain no growths, but he was unable to find evidence of the presence of bacteria after staining the intestinal contents with the usual agents. These results confirm the conclusions of Nencki, Nuttall and Thierfelder concerning the presence of bacteria as a non-essential factor in digestion.

Toxalbumin in the Flesh of Eels.—The discovery by Mosso of a toxalbumin in the blood of certain eels led E. BENECH (*Comptes-rendus*, 1899, cxxviii. p. 833) to investigate the question whether such exists also in the flesh. The minced flesh completely freed from blood was extracted with cold water. The residue contained nothing poisonous, but the watery extract yielded a toxalbumin which in doses of 0.02 per kilogramme proved fatal to rabbits. The substance is very susceptible to heat. At 86° F. the solution became turbid; at 104° it loses its toxic quality, and at 131° it is precipitated.

Typhoid Bacilli in Drinking Water.—A positive result, said to be the first instance in which the isolated typhoid organism responded to every test, including growth on gelatin, potato, litmus milk, bouillon and glucose bouillon, agglutination, and Pfeiffer's test with animals, has been reported by DRS. KÜBLER and NEUFELD (*Zeitschrift für Hygiene und Infectionskrankheiten*, 1899, xxxi. p. 133). The contamination of the well, the water of which had caused a small local outbreak, was traced to the urine of a typhoid patient whose vessel was emptied near the well. That the contamination was not of fecal origin was evident from the absence of the colon bacillus. Four weeks from the time of the discovery of the organism a second examination was made. On this occasion bacilli were found which responded to all the tests except Pfeiffer's, which exception was attributed to modified virulence.

Typhoid Fever from Infected Vegetables.—The State Board of Health of Massachusetts has conducted an investigation of an outbreak of typhoid fever in a public institution, a hospital for the insane, at Northampton, Mass., and demonstrated that the disease was spread by celery raised on the premises. On September 10, 1899, after practical immunity for ten years, cases began to be reported, and in fifteen days thirty-nine cases occurred. It was discovered that while patients, nurses, and servants were attacked the non-paying patients were exempt. Both classes of patients received practically the same kind of food, but the paying patients had occasional allowances of extras, like fruit and certain vegetables, and at this time had been receiving celery raised in beds which were watered with filtered sewage. This had been given out not only to the paying patients, but to the nurses and farm hands as well. After the blame was placed and orders issued that no more of the celery should be used, one of the farm hands ate some, and within ten days came down with the disease. As soon as its use was discontinued the number of cases began to diminish.

Another outbreak of a similar character was reported by Dr. Ferré (*Annales d'Hygiene Publique et de Médicine Legale*, January, 1899, p. 23) by whom it was investigated. This was in a girls' school at Jurancon (Basses-Pyrénees) which was attended by day scholars as well as by boarders. The drinking-water was exonerated, and the food supply inculpated by the fact that, while both classes used the water, only the boarders were seized. It was shown that the vegetable garden which supplied the school was watered with the contents of the cesspool which received the evacuations of all.

Transmission of Infection by Flies.—An interesting experiment illustrative of the possibility of transmission of infection through the agency of flies is communicated by Dr. F. Smith, of Sierra Leone (*Public Health*, December, 1898). Four Petri dishes were prepared, three with sterile, coagulated serum, and one with a culture of diphtheria on serum. A common house-fly was made to walk first over a sterile dish (No. 1), then over the one on which was the growth of diphtheria (No. 2), and next over the other two sterile ones (Nos. 3 and 4). Numbers 1, 3, and 4 were then placed in an incubator On the following day No. 1 showed only a few cocci, but Nos. 3 and 4 showed colonies of diphtheria bacilli in the tracks of the fly.

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